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ABSTRACT

The third year of an individualized multimedia bilingual magnet school project for limited English proficient students in Philadelphia was evaluated. Bilingual multimedia learning centers were operated at each of the two sites. At the elementary site, pupils from Korean, Spanish, and Portuguese backgrounds received bilingual instruction and were provided with materials for individual and small group instruction. At the secondary site, computer-aided instruction was offered in addition to other bilingual instruction to students of Chinese, French, Italian, Korean, Spanish, and Vietnamese speaking backgrounds. English comprehension and reading skills were accelerated by participation in the project, while English speaking skills progressed at a rate comparable to that of similar students city-wide. In addition, attendance and student retention objectives were met. (Author/RW)

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AN INDIVIDUALIZED MULTI-MEDIA BILINGUAL EDUCATION MAGNET MODEL

EVALUATION OF THE THIRD YEAR

1978-1979

Report
8125

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Division of Federal Evaluation Resource Services

January, 1981

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EXECUTIVE SUMMARY

An Individualized Multi-media Bilingual Education Magnet Model served limited-English-proficiency pupils from a variety of linguistic backgrounds. At the elementary site, pupils whose mother tongue is Korean, Spanish, or Portuguese participated in bilingual instruction. At the secondary site, pupils whose mother tongue is Chinese (Mandarin or Cantonese), French, Italian, Korean, Spanish, or Vietnamese were in bilingual instruction. Instruction in English for speakers of other languages was provided for all pupils who were not proficient in English regardless of mother tongue. A Bilingual Multi-media Learning Center (BIMLC) was operated at each site. This center contained a wide variety of materials for individual and small-group instruction of pupils. At the secondary site, the BIMLC contained terminals used for computer aided and managed instruction.

This report is devoted to evaluation of the third, and final, year of Title VII funding. Academic performance was evaluated using experimental designs that employed estimates of pupil achievement in the absence of the program which were derived from the regression of test scores on pupil characteristics. Where appropriate, a comparison of project students with an estimate derived from the city-wide Title I ESOL project evaluation was also used. Secondary level pupil attendance and pupil retention goals and enabling objectives were evaluated by comparing program outcomes to criteria developed by project management.

With the exception of development of informal reading inventories in the first languages of pupils, all enabling objectives were attained or considered attained. Program participants' English comprehension skills and English reading skills were accelerated by the project. English comprehension skills grew at a faster rate than those of equivalent students in the city-wide ESOL program. During 1978-1979, evaluation of English speaking skills was problematical because pupil mobility resulted in a small sample of students, but there was a trend that was similar to one observed the previous year--pupils grew at about the same rate as equivalent pupils in the city-wide ESOL program. Attendance and pupil retention goals were attained.

INTRODUCTION

Bilingual-bicultural programs are usually designed to meet instructional demands which arise when a school population is composed of two groups, native English speakers and speakers of one other language. When there are more than two groups, bilingual education is often avoided because the number of subgroups consisting of pupils sharing a common first language, a common level of experience with English, and a common age or grade level becomes inordinately large. The Individualized Multi-media Bilingual Education Magnet Model program is an attempt to deal with this diversity in a cost-effective way.

RATIONALE

Bilingual-bicultural programs are intended to provide support to limited English-speaking ability pupils through use of English and the home language for instruction. The Individualized Multi-media Bilingual Education Magnet Model program was designed to explore the feasibility of providing bilingual-bicultural instruction in a setting serving several language groups. To accomplish this goal, the Bilingual Individualized Multi-media Learning Center (BIMLC) concept was developed and implemented at two sites: Birney Elementary School and South Philadelphia High School. At the elementary school a bilingual program was available in Spanish, Portuguese, and Korean. At the secondary site a bilingual program was available in Spanish, French, Italian, Vietnamese, Chinese (Mandarin and Cantonese), and Korean. At both sites, pupils who spoke other languages also participated. These pupils made use of English to Speakers of Other Languages (ESOL) curriculum and relevant materials housed in the BIMLC. As some teachers are multi-lingual, many members of the smaller linguistic groups received informal assistance through their mother tongue when needed. Tutoring supplemented the classroom instruction of some students.

EXPECTED OUTCOMES

Pupils are expected to make a smooth transition from instruction in their home language and ESOL to mainstream instruction at the school. In the course of making the transition, competence in the home language is to be enhanced or retained, and growth in academic skill areas is to be maintained. As the BIMLC provides instructional resources which supplement ESOL, acquisition of English should be facilitated.

At the secondary level, the use of the mother tongue and flexibility in course rostering is expected to result in good attendance and more students remaining in school until graduation.

PREVIOUS FINDINGS

After two and one half years of operation, all pupil performance objectives were attained or considered attained. The rate of acquisition of aural comprehension competence exceeded the rate found among pupils of the comparison group--pupils in the Title I ESOL program.

Pupils in the program acquired speaking skills at the same rate as those in the comparison group. English reading scores increased at a faster rate than predicted from test-publisher's norms. Elementary school Hispanic pupils equalled or exceeded Spanish reading test norms for rural Puerto Rico. Secondary school Hispanic pupils' average score was equivalent to the 36th percentile of Puerto Rican tenth grade norms. Objectives regarding high school pupils' completion of the school year and attendance were attained.

During 1977-1978 new students were admitted to the secondary site program every few days, and 42% of the pupils on roll at year end were not on roll during the first ten days of school.

PROGRAM IMPLEMENTATION

Some aspects of program implementation were stated as enabling objectives. These aspects will be discussed in the next section, Attainment of Objectives. Other aspects of program implementation will be discussed in this section.

Project management successfully incorporated nearly all program elements at the two sites, an elementary school and a very large high school.

Elementary Level: The Birney Elementary School program served pupils in grades kindergarten through four (no fifth and sixth grade pupils attend the school). The basic instructional pattern was unchanged from that of the previous year. The majority of the pupils in the program spent part of the instructional day studying in English-language mainstream classes, studying ESOL in both classroom and Bilingual Instructional Multi-media Learning Center settings, and studying in classes which teach language arts and other subjects in the home language. During monitoring visits made in the spring of 1979, the program site coordinator reported that 121 pupils were being served. This was 23% more than the number of pupils being served during the same period the previous year.

Korean pupils were the largest language group in the program (51 pupils). This group was followed by speakers of Spanish (34 pupils) and Portuguese (14 pupils). In addition to the three major language groups of the elementary program there were 22 children who were speakers of other languages: 13 Laotian pupils, five Vietnamese pupils, two Guianese pupils, a Malaysian pupil, and a Pakistani pupil. According to the site coordinator, these children studied English as a second language and received instructional reinforcement in the BIMLC.

A modification in the elementary program was an increase in the number of hours of English instruction that "Beginning" ESOL level pupils received during the school day. During the first half of the school year, these pupils received one and one half hours of ESOL instruction daily in either a classroom or in the BIMLC. This was increased to two and one quarter hours during the second half of the school year. The increase in service was made possible by assigning a teacher who had previously had responsibility for both the center and classes to the BIMLC full time. To accomplish this, an additional ESOL teacher, who also spoke Spanish, was assigned to the program, and the BIMLC was moved to a classroom space which could accommodate more pupils than was possible in the space used previously.

During the past two years the principal, the site coordinator, and the teachers of the elementary program worked on and completed a new report card format suitable for a multi-lingual bilingual program. It has sections in English, Korean, Spanish and Portuguese which explain the meaning of the information the teachers record on it. This report card was used during the spring of 1979.

In conclusion, the elementary site program has continued to provide Korean, Hispanic, and Portuguese pupils with the services described in the proposal. Because of an increasing number of pupils who speak other languages, an additional staff member and larger quarters for the BIMLC have been provided. If the majority of the new arrivals continue to be of one nationality, Laotian, project management might explore adding an instructional component in their home language and adding the language to the newly developed report card.

Secondary Level: The program conducted at South Philadelphia High School, continued to provide bilingual instruction in seven languages, Spanish, French, Italian, Vietnamese, Chinese (Mandarin and Cantonese), and Korean. Pupils who spoke other languages (e.g., Arabic, Greek, Laotian) participated in the English instruction and the multi-cultural activities of the program.

Use of a BIMLC was part of the English instruction. The site coordinator developed a schedule which gave each ESOL teacher access to the center during specific periods each week. Based on teachers' diagnoses of pupils' needs, members of the ESOL classes were sent to the BIMLC. There they were able to do the individualized work that had been prescribed by the teacher and communicated to the aide who managed the center.

Largely due to events in South-East Asia, the secondary site program experienced a large increase in the number of pupils. An additional bilingual (English-Spanish) teacher of English for Speakers of Other Languages was added to the program staff, and a Chinese-speaking graduate student served as an aide during the spring. As the increase in student population occurred during the year, it was necessary to conduct classes in the library and, during some periods of the school day, in the BIMLC.

The evaluators had an opportunity to observe that the students of different groups could work well together when they attended a celebration of the Oriental New Year. The celebration was "stretched" to include songs and dances of both Oriental and Occidental cultures, and ended with dancing to rock and roll music.

During February, 1978, there were school-system wide increases in teaching personnel mandated by labor agreements. At the secondary level, one outcome of the increase was that students were permitted to rearrange their course rosters. Some secondary-school program students used this event to drop or change program classes. As a result of this action on the part of the students, the data analyses for Product Objective 2 had to be modified, and the number of pupils tested for part of Product Objective 1 fell below that considered reasonable by evaluators.

In conclusion, the secondary level program operated in a manner consistent with the intent of the proposal. The influx of new South-east Asian students was accommodated with additional staff, but the necessary instructional spaces could only be obtained by making compromises. The mid-year revision of all secondary student rosters resulted in attrition of the secondary-level pupils who were tested.

ATTAINMENT OF OBJECTIVES

ENABLING OBJECTIVES

Objective 1. During 1978-1979, program staff will continue to identify, evaluate, and purchase instructional materials and equipment for the Bilingual Individualized Multi-media Learning Center. This will include:

- . Acquisition of appropriate grade level instructional materials for teaching reading and other subjects in each of the languages of the program.*
- . Reproduction and delivery of off-line materials needed for the computer-managed and computer-assisted instruction at the secondary school site.*
- . Acquisition of other programmed instructional materials.*

This objective was attained. Evaluators reviewed the materials which had been acquired and ordered during the fall of 1978 with Division of Foreign Languages staff. Evaluators saw a new System 80 unit, new film strips, new tapes in English, and a variety of instructional aids which could be used with existing hardware when they visited the elementary BIMLC. A new System 80 unit, new film strips, and new Language Usage Skills cassettes were purchased for the secondary school BIMLC.

In addition to the new acquisitions noted above, site coordinators reported, and monitoring visits confirmed, that equipment purchased during the previous years was on hand and in use. Consumable materials (workbooks, Voxcom cards, and off-line materials for use in computer-based instruction) were available when evaluators visited the sites.

Although the primary function of the BIMLC is the teaching of English, the center at the secondary site had a substantial amount of written materials in the first languages of pupils served by the program.

The evaluation of the second year reported that teachers at the elementary site were not using the Voxcom because of the complexity of the planning required. This problem has been solved, and evaluators saw the Voxcom being used frequently.

The second year evaluation also raised questions about the inclusion of computer-aided and computer-managed instruction at the secondary site. Not all all issues related to the computer based instruction were resolved. During the early months of the program, frequent equipment malfunctions were reported. Throughout the year, pupils had to be reminded to "sign off" when ending a period of computer use. Failure to sign off prevented the pupil's work with the computer to register properly. In late May, the aide serving the BIMLC interrogated the computer record keeping system to determine the amount of time each pupil in the program had used it, but the information obtained was valid

for only some pupils. Registered usage ranged from 0 to 15 hours during the year, but this under-estimates the true amount of use. The aide reported that a few students used the computer often, but many others felt intimidated by the equipment.

Four computer programs were available, a reading program, a consumer education program, a career information program, and a multi-topic program dealing with 13 areas such as games, mathematics, chemistry, social science, business and language arts. The aide reported that the reading program, the mathematics component of the multi-topic program, the career information program and, the games component of the multi-topic program were the ones most frequently used by students.

In conclusion, at the end of three years of Title VII funding, all goals stated in this objective have been attained, but evaluators believe that, due to equipment and record keeping problems, the value of computer based instruction at the secondary level has not been demonstrated.

Objective 2. A recruitment program will be conducted by project staff, district superintendents, principals of the two sites, and the Office of Informational Services that will attract non-English dominant Spanish, Portuguese, Korean, Chinese, Vietnamese, Italian, and French speaking pupils who live outside the regular boundaries of the project schools, thus creating the magnet program. This program will begin in August, 1978 and continue through December, 1978. It will include:

- . News releases sent to newspapers serving each of the language groups.*
- . Announcements on radio programs serving speakers of the language of the program.*
- . Pupil recruitment by members of the program's parent advisory group.*
- . Notification to all principals of elementary and secondary schools describing the programs and asking them to identify students who can benefit from them.*

This objective was attained. School personnel reported activities similar to those used during the first two years of the project. The secondary level program drew students from areas outside the regular school boundaries. The elementary program served pupils who resided in the multi-ethnic neighborhood surrounding the school.

Site coordinators of both the elementary and secondary programs reported that they used the city-wide screening procedures to identify project participants. As this was the third year of operation, the program was known to principals of other schools. The coordinators reported that articles about the program appeared in the schools and in the Hispanic and Asian press. The project was described on the local Spanish-language radio station. Project coordinators from both schools reported extensive contact with the staffs of other schools and with community organizations serving immigrant populations, especially Nationalities Service Center. Contacts established during previous years with other service organizations, Catholic Social Service Agency, Lutheran Children and Family Services, and Jewish Family Services, were reported to have been maintained.

Flyers in six languages were disseminated in the various ethnic communities served by the secondary level program. These were placed in shops merchandizing goods directed to the target ethnic groups. The secondary level program was also described in literature prepared by the Foreign Language Magnet School program of the city.

At the elementary level, teachers engaged in activities which resulted in a high degree of personal contact. Teachers and the site coordinator reported making visits to homes. They also reported meeting with neighborhood church groups which cater to the needs of the ethnic groups to be served.

As was the case during the first two years of the program, the outcome was not the same at the two school sites. At the elementary site, the pupils tended to reside close to the school. In the past the principal of the elementary school stated that the existence of many elementary schools with ESOL and bilingual programs reduced the probability that parents would send their children to a school outside the neighborhood. At the second site, many program students came from outside the usual feeder area of the school.

Objective 3. Program staff speaking Chinese, Italian, Portuguese, Vietnamese, Korean, and French will, with the assistance of supervisors and evaluation personnel, develop informal reading inventories to be used in subsequent years to evaluate mother-tongue reading performance of pupils speaking these languages. These inventories will be prepared by June, 1979.

This objective was not attained because staff time was used in ways which had higher priorities. History materials for use with Chinese, Vietnamese, and Korean secondary students were prepared. A multi-lingual report card was designed for the elementary level program, and a booklet of useful English expressions was prepared for parents.

A common reason appears to underlie the failure to attain this objective during the three years of the project: the need to develop appropriate instructional tools in languages other than English and Spanish. In each year, development of these materials has taken precedence over the development of informal reading inventories.

Objective 4. Monitoring will show that staff and students are familiar with the use of the individualized materials and equipment in the BIMLC.

This objective was considered attained. Students and staff appeared to be familiar with the use of all equipment during monitoring. As discussed earlier in this report, computer maintained records suggested that secondary level students either did not use the computer equipment properly or used it infrequently. During the late spring, when a sharp increase in the number of South-east Asian pupils made classroom space scarce, the secondary site BIMLC was used as a classroom for half the school day.

Observation of the use of the BIMLC at both the elementary and secondary sites indicated that the non-computer based equipment was used regularly. At the secondary site the students worked with individualized instructional materials in two ways. During some periods, teachers brought the ESOL class they were teaching to the center; during other periods, teachers sent students to work in the center with materials they had prescribed. The BIMLC aide would obtain the materials and assist the students in their use. Students were observed working in small groups or by themselves when they were in the BIMLC.

At the elementary level all pupils in an ESOL class were scheduled to work in the BIMLC at the same time. An ESOL teacher and the BIMLC aide were present when pupils were working in the center. In addition, an ESOL teacher, who served as a resource specialist, was present in the center during the second half of the school year. Small groups were observed working with one of the adults in the room. While these group activities were conducted, individuals worked with Systems 80 and Voxcom type teaching equipment.

Product Objectives

1. The rate of acquisition of English speaking and comprehension skills of pupils measured by the Philadelphia ESOL Screening Test and the Test of Aural Comprehension (TAC) will be increased to a significant degree ($p < .05$).

This objective was attained for English comprehension skills. The number of pupils whose scores could be analyzed (35 pupils) was too small for a fair evaluation of speaking skills.

Analysis of Test of Aural Comprehension (TAC) scores showed that there was a statistically significant relationship between months in the program and mastery of English comprehension. The relationship was curvilinear, meaning pupils learned to comprehend English quickly upon entry into the program, with the rate of learning (as measured by the TAC) decreasing the longer the pupil was in it. There was also evidence that the rate of growth of pupils' comprehension of English in this program exceeded the rate of growth of pupils in the city-wide Title I ESOL program.

To evaluate aural comprehension, high school pupils were divided at random into three groups, elementary school pupils were divided at random in two groups. TAC tests were administered every few weeks throughout the spring, according to a schedule which prescribed testing at the secondary site, then the elementary site, then the secondary site, etc. In this manner, evaluators attempted to vary participants' exposure to the program at the time they were tested.

To evaluate the effect of the program on TAC performance, a multiple regression analysis was computed which explained 61% of the variance in scores. The results are shown in Table 1. Test Form, Birthplace, Sex, linear and curvilinear effects of Grade, the effect of moving from one school to another during the year, (School Continuity) and length of residence in the United States mainland (Mainland Residence) were controlled statistically in order to obtain a measure of the effect of the program on pupils which was not confounded by these variables. As can be seen in the table, only one of the control variables, Grade, was statistically significantly related to TAC scores once the other variables were taken into account.

The effect of pupils' exposure to the program was statistically significant. Two significant regression weights, 1.15 for Months in the Program and -0.02 for Square of Months in the Program describe a curvilinear growth pattern. During the first few months in the program pupils' scores increased rapidly. The longer a pupil was in the program, the slower the rate of increase. The regression analysis suggests that, after 29 months the program would, in theory, have no effect on the typical pupil's acquisition of the English comprehension skills measured by the TAC. As this program has been funded for three school years (30 months), and was not implemented fully during the fall of the first year, the regression analysis suggests that pupils learned skills measured by the TAC during the entire period they were exposed to the program.

Because the TAC was also used in the city-wide Title I ESOL project, it was possible to compare the comprehension growth rate found in the Title I ESOL project to the growth rate found in this program. In the evaluation of the Title I program, a regression analysis similar to the one just described was computed. In the Title I evaluation no first grade pupils were tested, and a variable to control for differences between public and parochial schools was included. A comparison was made between the regression weights of the Individualized Multi-media Magnet Model program and the corresponding regression weights of the Title I ESOL program. The differences between the regression weights were compared to the standard errors of their differences. The regression weights reflecting the effects of pupil background characteristics were similar in both programs. In contrast, the linear and curvilinear effects of participation in the programs differed by two or more standard deviations. The linear effect of Months in the Title VII program was larger, suggesting that, upon entering it, pupils' aural comprehension grew faster than in Title I ESOL. The curvilinear effect was also stronger, suggesting that, eventually Title I ESOL participants' aural comprehension growth would catch up to the growth found in the Individualized Multi-media Magnet Model project.

Speaking skills were to be evaluated by having program site coordinators and teachers administer the two speaking portions of the Philadelphia ESOL Screening Test a few weeks after pupils took the TAC test. A 33% sample of students reported to be on roll when TAC testing was conducted were to be tested. While this happened at the elementary school site, fewer pupils were tested at the secondary site than was anticipated because some students transferred to mainstream English classes around mid-year. The information needed to analyze the scores of many remaining secondary level students was not available because they were newly admitted. As a result, speaking test scores of only 35 pupils could be analyzed. Regression models, similar to the one used to evaluate aural comprehension were computed. Birthplace, Sex, linear and curvilinear effects of Grade, continuity of attendance at one school (School Continuity) and length of residence in the United States mainland (Mainland Residence) were used to control for pupil background. Months in the Program and the Square of Months in the program were the variables which reflected the effect of the program on achievement. Two analyses were computed, one for each of the speaking test scores.

The set of predictor variables in each analysis explained substantial portions of the variability in the scores (45% of the variance of the first speaking test score, 54% of the variance of the second speaking test score). However, none of the regression weights, including those measuring program impact were statistically significantly different from zero on the first measure of speaking and only Birthplace and Years of Residence in the United States mainland were significantly different from zero ($p < .05$) on the second. Although they were not statistically significant, the sizes and directions of the weights of the variables reflecting program participation were similar to those of corresponding analyses in the Title I ESOL program.

In summary, this year's evaluation of mastery of English aural comprehension skills confirms the previous finding, that the Individualized Multi-media Bilingual Magnet Model accelerates the rate that pupils learn this skill. In contrast, the finding of previous years, that speaking skills were enhanced by the program to the same degree as in the Title I ESOL program, was not confirmed. The combination of a complicated sampling design, secondary students' changing their rosters,

the influx of students at the secondary level, and the resulting low number of pupils whose scores could be analyzed were probably the reasons for previous years' findings not being replicated.

2. The rate of acquisition of English reading skills, as measured by the Stanford Achievement Test, will increase significantly among pupils in grade 1 and above.

This objective was considered attained. As pupil history data collected during the administration of the TAC tests were needed for the reading-test analyses and there was a high rate of pupil mobility, only about half the program participants' scores could be analyzed. Separate analyses of fall and spring tests were carried out when the fall data could not be used to calculate an estimate of the spring scores. The analyses showed that participation in the program was statistically significantly related to reading achievement.

Two sets of regression models were computed, one reflecting the impact of the program on students as of November, 1978, the other reflecting the impact of the program as of April, 1979. Each set showed statistically significant ($p < .05$ or better) improvement in scale scores attributable to program participation on the three reading-related subtests of the Stanford Achievement Tests.

During the fall, Form A of the test was used. During the spring, Form B was used. Primary Level 1 was used at the elementary school, and Intermediate Level 1 was used at the secondary school. A program evaluator conducted the testing.

Table 2 shows the analyses of the November tests, which reflect the effect of the program on pupils through November, 1978. At the time of the test these pupils could have been in the program for up to twenty-three months. As pupils had been admitted continuously throughout the program's period of existence, the majority of those tested were in the program for shorter periods of time.

The three analyses (Word Study Skills, Reading, Vocabulary) each explain at least 60% of the variation in scale scores and have regression weights showing that the control variables (Birthplace, Sex, Grade, School Continuity, and Mainland Residence) had similar effects on the three reading measures. Birthplace and Grade variables had effects which were statistically significantly ($p < .05$) related to performance on all three tests. There were also statistically significant relationships between Vocabulary score and Sex and School Continuity; and between the Reading subtest score and Mainland Residence. When background variables were controlled statistically, program exposure was significantly related to Word Study Skills, Reading and Vocabulary scores. The linear trends were all significant ($p < .05$ or better) and positive. Upon entering the program, Word Study Skills scores rose at an estimated rate of 3.26 scale score units per month, Reading scores rose 1.80 units per month, and Vocabulary scores rose 1.57 units per month as a result of program participation. The variable Square of Months in the Program reflects change in the rates of learning with increased program exposure. The statistically significant small negative weight for this variable in the regression equation for Word Study Skills and the non-significant negative weights in the equations for Reading and Vocabulary suggest that the rates of acquisition of reading-related skills may not be linear.

Table 3 shows the results of testing students in the Spring with an alternate form of the reading test. While the percent of variance explained by each regression analysis dropped slightly, and fewer pupil background variables were statistically significant, the results of the spring testing confirm those of the fall. The accomplishments of pupils attributable to the program were measured to a statistically significant degree ($p < .05$). Again, there was evidence that the rate of mastery of reading-related skills may not be linear.

Evaluators originally planned to use the pretest scores to predict posttest scores. In so doing, they would have used the pretest regression equations to predict the score a pupil would have attained at the time of the posttest if the pupil had not participated in the program during 1978-79. However, evaluators found that a key variable, Mainland Residence, had negative, rather than positive regression weights. Examination of correlation matrices suggested it was a suppressor variable. If the fall findings had been used to predict spring scores, findings would have been misleading.

The analyses presented do not differentiate between the study of English in the Individualized Multi-media Bilingual program and study of English in the city-wide ESOL program. The reader should be aware that the analyses reflect the cumulative effects of pupil participation in both programs. Earlier in this report the evaluators noted problems of pupil mobility at the secondary level. As a result of these problems, secondary level pupils are under-represented in these analyses. Evaluators believe that secondary pupils with the highest levels of English reading competence are the ones who were most likely to choose to drop English instruction in the bilingual program in favor of English instruction in the mainstream of the school. For this reason, secondary pupils with the highest levels of English competence were probably under-represented in the analysis of the posttest scores.

Objective 3: At least 75% of the 10th grade pupils and 85% of the 11th and 12th grade pupils enrolled in the program by October, 1978 will complete the school year.

This objective was attained. Pupil retention was greater than 85%, the more stringent criterion stated in the objective. As was the case in prior years, many secondary level pupils were not assigned to a grade, making grade-dependent criteria inappropriate for evaluation of this aspect of the program.

Ninety-three program pupils were on roll in the secondary school program according to the October Pupil Directory computer file. One of these pupils transferred to a non-public school. Of the remaining 92 pupils, four pupils dropped out of school, for a retention rate of 96%, which is above the 85% criterion.

In the course of determining pupil retention, evaluators found that 17 pupils in the group graduated from high school by the end of the year.

Objective 4: Secondary level pupils served by the program will have an absentee rate no greater than that of other pupils in the same grade enrolled in the same school.

This objective was attained. Secondary school program pupils' attendance was well above the attendance of other pupils at the school. As was the case with Performance Objective 3, a grade-dependent analysis was not made because of the large number of ungraded pupils in the program.

A total of 241 pupils participated in, or were admitted to, the secondary school program during the course of the year and had retrievable attendance records. These pupils were present an average of 80.1% of the days they were on role. This compared to 64.4% for the school as a whole.

In order to make the comparison of pupils in the program with pupils of the school a fair one, seven pupils who enrolled but never attended were included on the program role. The Division of Administrative and Survey Research reported that pupils who registered, but never attended school, were included in the school-wide data they provided. If the pupils who were on role but never attended the program were eliminated from the count, the average daily attendance of participants would have been 80.6%.

Attendance of program participants also compared favorably with city-wide high school attendance. The average attendance in all high schools was 74.3%, 5.7 percentage points below the program rate.

SUMMARY AND CONCLUSION

An Individualized Multi-media Bilingual Education Magnet Model project serves limited English proficiency pupils at one elementary and one secondary school. At the elementary school site the number of hours of English instruction was increased during 1978-1979. The proportion of students speaking languages other than Spanish, Korean, and Portuguese increased substantially as a result of changes in the composition of the neighborhood around the elementary school. Other major aspects of the elementary school program were unchanged and conformed to the proposal.

The secondary school program was conducted in a manner consistent with the proposal despite strains produced by external events. There was considerable mobility of students. The mobility stemmed from two principle causes. A city-wide re-rostering of secondary students resulted in some participants' moving from project English classes to mainstream English classes. A large number of new, Southeast Asian, immigrants in the city resulted in the admission of many new students to the secondary level program during the year. One result was over-crowding, which limited student access to the BIMLC. Equipment malfunctions, possible student failure to "sign-off" correctly, and limited student access to the BIMLC made it impossible to demonstrate the value of computer based instruction.

Three of four enabling objectives of the project were attained or considered attained. The one enabling objective not attained required the development of informal reading inventories in various languages. The development of instructional materials has taken precedence over the development of these tests each year of the program.

Examinations of pupil performance showed that they learned to comprehend English more rapidly than their peers in the city-wide ESOL project, and that English reading skills acquisition was accelerated by participation in the project. Attendance and pupil retention goals also were met. The analysis of speaking skills tests did not result in a statistically significant outcome. Due to pupil mobility, fewer pupils than expected were tested, and evaluators attribute the lack of statistical significance in the speaking skill area to this source. In the past, the rate of acquisition of speaking skills in this program has been similar to the acquisition rate found in the Title I ESOL program.

In conclusion, the project was effective in accelerating the acquisition of aural comprehension and reading skills. High school attendance and pupil retention goals were met.

TABLE I
ANALYSIS OF TEST OF AURAL COMPREHENSION SCORES

Variables	Weights	Significance(p<)
Test Form	3.39	NS
Birth Place Variables		
Puerto Rico	-5.37	NS
Outside USA	-5.13	NS
Sex	1.96	NS
Grade Variables		
Grade	10.40	.01
Square of Grade	-0.98	NS
Cube of Grade	0.03	NS
Ungraded Class	-1.95	NS
School Continuity	0.96	NS
Mainland Residence (years)	-0.25	NS
Program Exposure		
Months in Program	1.15	.01
Square of Months in Program	-0.02	.01

Average score = 22.16, R-square = 0.61, Standard Deviation Residuals = 8.69, N = 144.

TABLE 2

Multiple Regression Analysis of Reading
Scale Scores on Pupil Background and Program
Exposure Variables (Fall, 1978)

Variables	Regression Weights		
	Word Study Skills	Reading	Vocabulary
Birth Place			
Puerto Rico	-35.33*	-35.41***	-21.87*
Outside U.S.A.	-31.33*	-38.14***	-26.00**
Sex	7.26	1.92	5.78*
Grade Variables			
Grade	27.11**	20.65***	13.11**
Square of Grade	-3.66*	-2.43*	-1.94
Cube of Grade	0.17	0.11	0.11
Ungraded Class	4.98	13.75	-8.53
School Continuity	-12.62	-5.88	-14.03**
Mainland Residence (years)	-4.60	-4.06**	-2.00
Program Exposure			
Months in Program	3.26**	1.80**	1.57**
Squares of Months in Program	-0.07*	-0.03	-0.03
Average score	103.74	114.50	103.09
R-Square	0.60	0.78	0.72
Standard Deviation of Residuals	23.36	14.17	12.84
Number of Cases	94	94	93

*p<.05

**p<.01

***p<.001

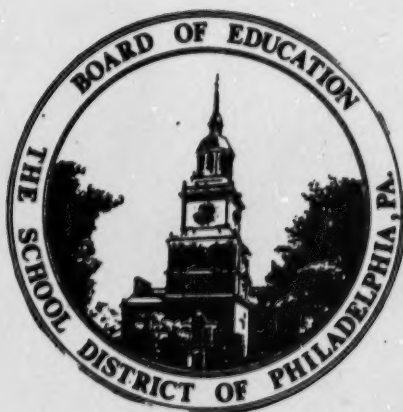
TABLE 3
Multiple Regression Analysis of Reading
Scale Scores on Pupil Background and Program
Exposure Variables (Spring, 1979)

Variables	Regression Weights		
	Word Study Skills	Reading	Vocabulary
Birth Place			
Puerto Rico	-18.38	-12.60	-27.22**
Outside U.S.A.	-24.32	-15.54	-35.10**
Sex	7.62	3.89	0.23
Grade Variables			
Grade	27.31***	14.43*	1.89
Square of Grade	-2.74	-0.97	0.69
Cube of Grade	0.08	0.02	-0.04
Ungraded Class	-20.15	-8.01	-0.86
School Continuity	-7.88	-4.79	-0.33
Mainland Residence (years)	-3.30	-2.36	-2.33*
Program Exposure			
Months in Program	3.09*	2.40**	1.47*
Square of Months in Program	-0.06*	-0.04*	-0.02
Average Score	109.60	121.39	109.01
R-Square	0.60	0.70	0.68
Standard Deviation of Residuals	20.85	15.23	12.03
Number of Cases	90	92	90

*p<.05

**p<.01

***p<.001



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